ANNUAL REPORT

OF

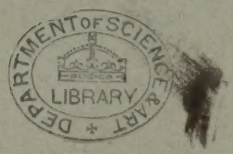
THE DIRECTOR-GENERAL

OF THE

GEOLOGICAL SURVEY OF THE UNITED KINGDOM,
THE MUSEUM OF PRACTICAL GEOLOGY,

AND

THE GOVERNMENT SCHOOL OF MINES AND OF SCIENCE APPLIED TO THE ARTS.



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HRB
27.8.96

ANNUAL REPORT of the DIRECTOR-GENERAL of the GEOLOGICAL SURVEY of the UNITED KINGDOM, the MUSEUM of PRACTICAL GEOLOGY, and the GOVERNMENT SCHOOL of MINES and of SCIENCE applied to the ARTS.

REPORT OF DIRECTOR-GENERAL OF THE GEOLOGICAL SURVEY, &c.

Geological Survey of the United Kingdom.

THE work accomplished in Great Britain during the past year by Professor Ramsay and the surveyors whose labours he superintends has exceeded that of any former year, and well justifies the recent appointment of the two additional officers, whose services were accorded at my request.

The annexed Table, prepared by Professor Ramsay, explains at one view the total amount and all the details of the work completed or in progress relating to the Geological maps of the English counties of Hants, Sussex, Kent, Surrey, Berks, Bucks, Oxford, Hertford, Bedford, Cambridge, Huntingdon, Nottingham, Stafford, Chester, and Lancaster, and the Scotch counties of Berwick, Haddington, Edinburgh, Linlithgow, and Fife. During the year, 2,605 square miles have been surveyed, and of areas previously completed 996 square miles have been published. Parts of both of these areas consist of coal measures.

The same table also shows that nine sheets of sections have been published; whilst upwards of 200 miles of country have been traversed in levelling and preparing other horizontal sections for publication.

The accompanying index maps (A. and B.) are so coloured as to indicate, 1st, the sheets previously issued; 2nd, those recently published; 3rd, the tracts completely surveyed and ready for publication; and 4th, the maps in progress.

The extent of ground surveyed is the more remarkable when it is considered, that, in compliance with directions which I gave, 30 whole sheets and 80 quarter-sheets of the coloured Geological maps, *i. e.*, all that have as yet been published have been *lettered*, so that in case of the colours fading, each formation will be readily distinguishable. Five of the surveyors, viz., Mr. Aveline, Mr. Bristow, Mr. Drew, Mr. Bauerman, and Mr. Best, were employed in this labour, and were necessarily abstracted from those field surveys, which, notwithstanding such indispensable interference, have been extended over so large a surface.

The new horizontal explanatory sections, on the scale of six inches to the mile, are now illustrated by printed notices, in which Mr. Hull has described two sections made by himself across the North Staffordshire coal field, and the conterminous formations of Permian, Triassic, and Liassic ages. Professor Ramsay has himself published three sections across the Isle of Anglesea, accompanied by similar descriptions.

In Scotland progress has been made on the six-inch maps of the counties of Haddington, Edinburgh, and Linlithgow; Berwickshire and Fifeshire are also commenced. The work completed

during the year (see index map B.) comprises an area of 268 square miles, consisting chiefly of coal measures in a valuable mining district. The structure of these coal fields is exceedingly complicated by contortions and faults, and also by the intrusion and intercalation of numerous bosses and layers of igneous rocks, which render the geology of the country more difficult to unravel and represent on the maps than any of the English coal fields heretofore completed. The publication of these data will take place as soon as the work can be transferred to the one-inch maps now in preparation.

The sale of the maps and sections, though considerable, has been affected, as might be expected, by the recent monetary crisis; this is especially evident in the sales of the last half of the year.

In addition to his other duties, Professor Ramsay, with the permission of the Lord President of the Council, undertook an excursion to Canada, which will, I trust, prove valuable by enabling him to compare the deposits of our country with those of her great American colony. He has further prepared and published a catalogue of 2,107 rock specimens in the Museum, in which work he was assisted by Mr. Bristow and Mr. Bauerman, during those winter months when field surveying cannot be carried on effectively. The compendious volume which contains this catalogue will be found to offer not merely a dry list of specimens, but also full descriptions of the rocks, with explanations of the manner in which they were formed, being thus a text-book alike useful to the students of the School of Mines and to the visitors of the Museum.

Mr. J. Beete Jukes and his assistants in Ireland have surveyed in the past year 1,731 square miles in the counties of Kerry, Limerick, Cork, Tipperary, and Clare, registering their observations on the six-inch scale maps, which being preserved in the Central Office at Dublin, serve as *data* for the colouring and publication of the one-inch maps of Ireland.

The index map annexed (C.) is coloured to show the rate of progress and actual state of the six-inch data maps of the Survey.

The publication of the one-inch Geological maps is necessarily governed by the progress of the engraving of the maps by the Ordnance Survey and by the number of sheets supplied by that department of the War Office. The coloured index map annexed (D.) shows the past and present state of the one-inch publication maps.

Other sheets would have been published had not Mr. Wilson, an able senior geologist, been lost to the Survey by his transference to the Geological Survey of India; thus leaving some of the difficult and detailed work relating to the Kilkenny coal measures, in which he had been last employed, in an unfinished state. Notwithstanding this delay, twenty-eight quarter-sheets have been published.

Mr. Jukes further reports that specimens of fossils, to the number of 5,616, have been collected and registered in the Museum of Irish Industry during the year 1857. These and the present accumulations are now being brought into order and classification

through the labour of Mr. Baily, who was last year transferred from the office in London to that of Dublin.

The researches of the Geological Surveyors of Ireland having been applied in the field to the six-inch scale maps, which for many years were the sole published maps of the sister kingdom, a considerable mass of these data has consequently been accumulated, which it is now necessary to condense upon the one-inch or publication maps. Hence it will be necessary in the ensuing summer to survey less ground, and employ some of the field surveyors in preparing maps for the public, on which the geological structure of extensive tracts will be laid down from the materials registered on the data maps. The latter, though useful as official records or for consultation, are comparatively valueless until compared and reduced by the same surveyors who constructed them, and whilst the data are fresh in their minds.

Great progress has been made during the last year in the Natural History branch of the Survey. Much zealous labour and methodical arrangement were called for to carry out my wish, that the numerous accumulations of duplicate fossil organic remains collected during many years, and which were lying as incumbrances in our vaults, should be named and labelled, so as to be rendered useful for distribution among the various educational bodies in which geological science is cultivated. The labours of Professor Huxley, Mr. Salter, Mr. Baily, and Mr. Etheridge being completed, I have the satisfaction to announce that twenty-two duplicate collections have been transmitted to the following institutions:—

List of Institutions to which Duplicate Sets of Fossils have been forwarded.

1.	Dublin	The Museum of Irish Industry.
2.	Edinburgh	The Industrial Museum.
3.	Calcutta	The Museum of Practical Geology.
4.	Montreal	The Geological Survey of Canada.
5.	New York	The State Cabinet.
6.	Hobart Town	The Royal Society of Tasmania.
7.	Melbourne	The University.
8.	Cape of Good Hope	South African Museum.
9.	Belfast	The Queen's College.
10.	Cork	The Queen's College.
11.	Galway	The Queen's College.
12.	Aberdeen	Marischal College.
13.	Birmingham	The Midland Institute.
14.	Bristol	The Philosophical and Scientific Institute.
15.	Manchester	The Natural History Society.
16.	Dundee	The Watt Institution.
17.	Hull	The Royal Institution.
18.	Chatham	The Royal Engineers' Establishment.
19.	Cirencester	The Royal Agricultural College.
20.	Nottingham	The Mechanics' Institution.
21.	Woolwich	The Royal Artillery Institution.
22.	Warwick	The Natural History Society.

These collections, containing in all 25,178 specimens named and labelled, have been, with one exception, distributed either in the United Kingdom or in the British Colonies: the single exception has been made in favour of the State of New York, in consequence of the intimate geological connexion between that portion of the United States, as illustrated by Mr. James Hall, and the British Colony of Canada, described by Sir William Logan.

This distribution of these recognized characteristic types of formations will, I trust, be considered of real value in diffusing a correct acquaintance with one of the great bases of geological science.

The report of Professor Huxley on the improved arrangement of the Palæontological Collection of the Museum is highly satisfactory, and the result is a proof of the perspicuity and energy applied by himself and the new assistant, Mr. Etheridge, whose duties have been performed in the most praiseworthy manner.

The recent cleansing and repainting of the interior of the building has enabled Professor Huxley to carry out his plan of re-arrangement, by which not only will every specimen be clearly displayed,—typical species being affixed to tablets of a distinct colour,—but much additional space will be gained for the interpolation of additional specimens. With this gain and the carrying out of the suggestion that the flat cases in the gallery should be doubled, it is hoped that no call for additional room will be made for a long time to come. It is indeed evident, that the present Museum, under proper arrangement of the materials, is sufficiently large to contain those characterestic organic remains, the knowledge of the relative position of which in the crust of the earth enables the geologist to identify the strata and so construct the Geological map of Britain, which is the fundamental object of the establishment.

This collection being thus defined and limited in its scope, in accordance with the sagacious views of my predecessor, my duty will be so to regulate the increase of specimens that a complete collection of all British fossil remains may be formed. The entire skeletons of the great fossil Vertebrata would occupy too much space in our Museum;—such large remains being, for obvious reasons, best exhibited in the British Museum, College of Surgeons, and other spacious buildings. It is desirable, however, that the Museum of the Geological Survey should contain some well chosen complete examples of the Sauroid and other Vertebrata, which are highly illustrative of the younger Palæozoic, Secondary, and Tertiary deposits, and, in the absence of which, some of the lectures could not be illustrated. In this sense two new specimens of the genera Ichthyosaurus and Plesiosaurus have been purchased; the latter affording to Professor Huxley materials for a new Decade.

Mr Etheridge is now reducing to order the great previous accumulation of Mesozoic fossils

Although the superintendence of the improvements and alterations in the cases of fossils has necessarily taken up much of the time of Professor Huxley, he has, in addition to the duties which he performs in common with the other Professors, advanced far in

the preparation of a memoir on the structure and affinities of Pterygotus, which will appear in a Decade, to be published under the joint superintendence of the Palæontologist and himself, as an introduction to the systematic description of the species, furnished by Mr. Salter. Professor Huxley has printed the introductory portion of the Explanatory Catalogue of the Palæontological collections on which he is engaged, but which cannot be brought out until the additional cases are provided. As Naturalist to the Survey, he has, at the request of the Board of Trade, drawn up and forwarded to the proper authorities a series of queries and directions for collecting the varieties of the herring, and he will shortly be occupied in examining and reporting upon these varieties when transmitted to London.

The Hydrographer of the Admiralty having applied to me to aid in pointing out the best method of collecting and preserving objects of interest likely to be found in the soundings across the Atlantic, made by the officers of H.M.V. Cyclops, Professor Huxley obligingly volunteered to draw up instructions, which have been so well carried out as to have ensured the collection of many unique microscopic forms of life derived from great depths, the most important of which will be fully described and figured at the expense of the Admiralty. A preliminary report on the subject has been already presented to the Hydrographer.

The Palæontologist, Mr. Salter, has named in the last year 2,295 specimens,* 200 of which have been transferred to the Museum and the remainder to the duplicate stores. This result is necessarily inferior to that of last year, inasmuch as he has been deprived of the assistance of Mr. Sharman, who was transferred to the business of the Museum on account of the great pressure of work in it. The loss by death of a young man, John Rhind, whom Mr. Salter had trained to become a useful and accurate junior assistant, has tended much to retard his work. An assistant of more advanced knowledge is therefore required, and I have suggested that such an appointment should be made.

Mr. Salter has now nearly completed a Decade in connexion with Professor Huxley, on the large Pterygoti of the Old Red Sandstone of Scotland, and another Decade on star fishes has been brought into a forward state.

He has, further, commenced the formation of catalogues of the Lower Palæozoic Rocks, one section of which is nearly completed, and he has as usual given demonstrations in Palæontology to the students of the school.

Museum and Library.—Lists of the donations to the Museum and Library are appended (III. & IV.) They equal in number and value those of any previous year, and show that the interest of the public in the institution does not decrease.

Although the number of visitors somewhat diminished, in consequence of the closing of the Museum during twelve weeks

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* By a printer's mistake in last year's Report, 11,000 *species* instead of specimens were reported as catalogued.

for the necessary cleaning and painting of the interior, their numbers have amounted to 17,197.

The descriptive guide to the whole contents of the Museum, which was announced last year as in preparation, has been published, and affords general satisfaction. Six hundred and five copies have been sold, and the amount resulting from the sale has been paid into the Exchequer.

The explanatory catalogues of the rock specimens and fossils by Professors Ramsay and Huxley have before been referred to, as well as the great improvements which have taken place in the galleries by the re-classification and arrangement of the fossils.

Mining Records.—The objects of the Mining Record Office have been pursued by Mr. Robert Hunt, the keeper, with his accustomed activity and industry. In various journeys he has collected materials relative to our Mineral Statistics, the publication of which have already been so well appreciated by the Parliament and the public. In these researches, Mr. Hunt has met with the willing co-operation of many individuals connected with the production of coal and iron and of various metals, as well as with the support of mining proprietors and managers of railroads, all of whom gladly aid the Keeper of the Mining Records in furnishing materials for works which are highly estimated both at home and abroad.

Mr. Hunt has also been gathering together documents for preservation which register the state of underground mining operations. These records may often prove of great value, particularly when they indicate the state of a mine which, having been abandoned, is about to be re-opened. Let us hope that in a few years this collection of mining plans and sections will be rendered so complete, that mineral proprietors may depend on finding within our walls reliable information on subterranean workings. If a very small addition be made to the grant for this purpose, the object would be sooner attained—the more so if a subordinate clerk be admitted as a requisite addition in this branch of the institution.

In the preparation of these works, and in the formation of a catalogue descriptive of the collections of Mining Records in which he is engaged, Mr. Hunt has been well aided by his assistant Mr. Richard Meade.

School of Mines, &c.

The entries of the students to the School of Mines, which were last year reported as thirty-five, have during the present session increased to fifty-four. Of these, ten have paid the fees as matriculated students for the courses of lectures extending over two or three years, and one has been received as a free student from the Mining School at Truro. Of the remaining students,

34 have entered to the course on Chemistry.
6 „ „ Physics.
4 „ „ Mining.
5 „ „ Metallurgy.

It has been explained before, that these returns being made up to the close of the year, do not include the total number of students' entries during the whole session, which is divided into two terms; the first commencing in October and the second in February. The lectures on Mineralogy, Geology, Natural History, and Applied Mechanics, as well as the lectures to the working men, commence after this return has been furnished, and consequently the entries for the present session, 1857–8, cannot be given.

The following is the complete return of the students attending the lectures during the session 1856–7. The total number entered was fifty-four; of these eight were matriculated students, whose period of study extends over two years; one paid the fees as a perpetual student, to be entitled always to attend the lectures, and of the remaining forty-five,

3	entered to all the courses of lectures.		
18	„	the course on	Chemistry.
3	„	„	Physics.
3	„	„	Metallurgy.
7	„	„	Mining and Mineralogy.
8	„	„	Natural History.
7	„	„	Applied Mechanics.
8	„	„	Geology.

The following courses of lectures to the working men were delivered during the past session, and attracted the same numbers as usual; all the tickets (600) for each course having been applied for and issued within a few hours :—

Six upon	Natural History -	By Professor Huxley.
„	Geology - - -	By Professor Ramsay.
„	Applied Mechanics -	By Professor Willis.

The period of study for the matriculated students which was formerly limited to two years, has, during the present session, been extended to three years, at the option of the students. Experience has shewn that so many of the students come unprepared by any previous scientific instruction, that they were unable at once to derive full benefit from the lectures, and, by passing their examinations, to obtain the certificate within the limited period of two years. It is believed that this extension of the period of study will be of much advantage to the students.

Notwithstanding the total absence this year of officers of the Queen's and the Hon. East India Company's Service, who are admitted to the lectures on advantageous terms, it is gratifying to note the increase in the numbers of both matriculated and occasional students; it being evident, that as the School of Mines becomes more known, so will the students increase.

From the fees received during the session 1856-7, 57*l.* 13*s.* 5*d.* have been paid into the Exchequer.

Chemical Laboratory.—Dr. Hofmann's return of the number of students who have attended the laboratory of the school during the past year is very encouraging, and shews the steady progress which has been made in the affiliated College of Chemistry, whilst the lectures delivered in the new theatre of that building have

Dr. Percy commends his assistant, Mr. Richard Smith, who has assisted the students in the assaying of ores, &c., and in the preparation of metallurgical products.

It is gratifying to know that students from North and South America and Australia, as well as of our own country, have been receiving instruction in the Metallurgical Laboratory.

Return of Students attending the Metallurgical Laboratory :—

	1856.	1857.
Spring session - - - -	9	7
Summer session - - - -	8	8
Winter session - - - -	7	6
	24	21

Printed Works.—The works published during the year have been as follows :—

British Organic Remains, Decade IX.; Memoir on the Geology of the Country round Cheltenham; Mineral Statistics for 1856; Catalogue of the Rock Specimens in the Museum; Descriptive Guide to the Contents of the Museum; Explanations of Horizontal Sections Nos. 40, 41, and 42.

The last Decade (IX.) on British Fossil Fishes affords a proof of the value of the skilful labours of Sir Philip de M. G. Egerton, who has added to this Decade an Appendix relating to the three Memoirs he has contributed, which, when united, form a valuable work on British Ichthyolites.

The Memoir by Mr. Hull to accompany the Geological map of the country around Cheltenham has fully realised the anticipations expressed in my last Report.

The rest of the above mentioned publications have been referred to when alluding to the duties performed by Professors Ramsay and Huxley and Mr. Hunt.

Allusion having been made to the loss which the Survey has recently sustained in the transference of an able senior Geologist from Ireland to the Geological Survey of India; and it having been mentioned in former Reports that other Surveyors have previously quitted the Irish Survey for the Indian and other Surveys, I take this occasion to point out once more the obstacles which such transferences occasion to the more rapid progress of our labours when either the Geologist in question has attained a precision of work, or when, his first lesson having been learnt, he is becoming really useful. The latter instance has just taken place by the removal of a young surveyor, Mr. Bauerman, lately on the English list, to the Surveying Expedition of the Rocky Mountains in North America. Having been desired to recommend a person qualified for this task, I rejoiced in the opportunity of naming some one who was competent to assist in this National Expedition. It is, indeed, a source of pride to reflect that our Geological Survey, in conjunction with the School of Mines, should be able to supply men well fitted to work out the mineral structure of the distant possessions of the Crown. At the same time, since the disparity

of payment existing between the home appointments and those given to persons who explore distant lands, frequently deprives the Geological Survey of able assistants, the public must not expect that the Geological maps of the British Islands can be so rapidly issued as if they were executed by a body of well trained men, who have been continuously employed in the same work.

Among the gentlemen who were engaged on the Geological Survey of the United Kingdom or were educated at the School of Mines, I may well cite, with pride, the names of Professor Oldham and several of his assistants in India, of Mr. Selwyn in Australia, of Mr. Wyley at the Cape of Good Hope, and of Mr. Wall in the West Indies. The last of these geologists has, in conjunction with his associate Mr. Sawkins, thrown important light on the structure of Trinidad, and particularly by discovering the existence of thick beds of coal, which though of Tertiary age, is of so good a quality as to render it, probably, of great economical importance for steam navigation and other purposes.

Lastly, in thus briefly alluding to the useful employment at home and abroad of persons reared in our establishment, it gives me pleasure to be able to state, that being called upon by the Earl of Clarendon, I have recommended Mr. Richard Thornton, who passed through the Government School of Mines with credit, to be the Mining Geologist of the expedition about to sail for Southern Africa under the guidance of Dr. Livingstone.

RODERICK I. MURCHISON,
Director-General.

TABLES, &c.

TABLE I.—GEOLOGICAL RETURN of WORK done during

One-inch Maps.	Six-inch maps.	Hor. Sec. Sheets.	Ver. Sec. Sheets.	Counties.	Formations.
				ENGLAND.	
Nos.	*Nos.*	*Nos.*	*Nos.*		
3	...	...	...	Kent . . .	Cretaceous and tertiary.
				Ditto . .	Ditto . .
4	...	...	...	Kent and Surrey	Ditto . .
6	...	...	...	Berks, Bucks, Oxon	Cretaceous and alluvium.
7	...	...	...	Kent, Surrey, Hants	Cretaceous and tertiary.
8	...	...	...	Sussex . .	Cretaceous . .
9	...	...	...	Sussex and Hants	Cretaceous and tertiary.
11	...	...	...	Bucks and Oxon .	Oolites, cretaceous, and alluvium .
13	...	...	...	Gloucester, Wilts, Berks, and Oxon	Lias, oolites, cretaceous, & tertiary
34	...	...	...	Warwick, Oxon, and Bucks.	Lias, oolites, cretaceous.
45 N.W.S.W. S.E.	...	...	...	Bucks, Beds, Herts, Camb.	Oolites, Purbeck, cretaceous.
46	...	...	...	Herts and Camb.	Cretaceous . .
47	...	...	...	Beds, Hunts, Cam.	Oolitic cretaceous
52 S.E.	...	...	...	Nottinghamshire .	Permian, and new red sandstone.
71 N.E	...	...	...	Staffordshire .	Carboniferous, Permian, new red and lias.
72 N.W.	...	...	...	Ditto . .	Ditto . .
73 N.E.	...	...	...	Cheshire and Lancashire.	New red marl and sandstone.
80	107 108 Lancas.	...	...	Nottinghamshire .	Permian and new red sandstone.
82 S.E.	...	...	...	Lancashire . .	Carboniferous .
89 S.W.S.E.	85, 86, 92, 93, 94, 100 101.	...	...		
				SCOTLAND.	
...	1 to 18	...	...	Haddingtonshire .	Silurian, old red sandstone, carboniferous.
...	3, 5, 6, 7, 8, 11, 12, 13, 14, 17, 18, 19.	...	...	Edinburghshire .	Ditto . .
...	1 to 12	...	...	Linlithgowshire .	Carboniferous .
...	18, 19, 20, 25, 26, 27.	...	...	Fifeshire .	Old red sandstone, carboniferous.
...	1 and 4	...	...	Berwickshire .	Silurian, old red carboniferous.
	Carried forward				

SURVEY OF GREAT BRITAIN.

the Year ending December 1857.

Area published, 1857.	Area surveyed, 1857.	Area inspected.	Horizontal Sections published.	Horizontal Sections levelled.	Vertical Sections published.	Vertical Sections engraving.
Square miles.	*Square miles.*	*Square miles.*	*Sheets.*	*Miles.*	*Sheets.*	*Sheets.*
...	114	8	...	...	...	...
...	20	80		...	...	...
...	24	...	...	...	...	...
...	24	...	...	...	...	...
...	126	...	...	...	...	...
...	71	20	..	...	...	...
...	300	100	...	...	...	...
...	66	...	...	...	...	...
672	...	...	...	...	...	...
...	140	...	...	...	...	...
...	590	30	...	...	...	...
...	12	...	...	...	...	...
...	30	...	...	...	...	...
...	168	168	...	...	...	...
156	...	...	...	...	...	...
168	...	...	...	...	...	...
...	404	...	...	...	...	...
...	168	...	...	...	...	...
...	80	...	...	...	...	...
...	12	237	...	...	...	...
...	52	96	...	...	...	...
...	130	60	...	...	...	...
...	56	...	...	...	...	...
...	18	18	...	...	...	...
996	2,605	817	...	...	...	...

RETURN of WORK done during the Year

One-inch Maps.	Six-inch Maps.	Hor. Sec. Sheets.	Ver. Sec. Sheets.	Counties.	Formations.
Nos.	*Nos.*	*Nos.*	*Nos.*	Brought forward . . .	
				Horizontal Sections.	
54 N.W. N.E. 61 N.E. S.E. 62 N.E. S.E. & N.W. 55 N.E. 63 N.W. S.W. 72 N.W. S.W. 73, 74 N.E. & S.E.	...	...	...	Worcester, Warwick, Shropshire, Staffordshire, Cheshire, Flintshire.	Coal measures, Permian, new red sandstone.
71 N.W. 72 N.W. N.E. 73 N.E.	...	41, 42	...	Cheshire, Staffordshire, Derbyshire	Carboniferous
78	...	40	...	Anglesea . . .	Carboniferous, permian.
				Vertical Sections.	
10	...	...	...	Hants and Isle of Wight.	Cretaceous and tertiary.
16, 17	...		22	Dorsetshire.	Purbecks . .
63 N.W. S.W. 71 N.W. S.W.	...	...	19, 20	Derby & Leicester	Coal measures .
62 N.E. 63 S.W.	...	...	21	Warwick . . .	Ditto . .
61 N.E.	...	...	23	Shropshire . .	Ditto . .
74 N.E. S.E.	...	...	24	Shropshire & Denbighshire.	Ditto . .

ending December 1857—*continued.*

Area published 1857.	Area surveyed.	Area inspected.	Horizontal Sections published.	Horizontal Sections levelled.	Vertical Sections published.	Vertical Sections engraving.
Square miles.	*Square miles.*	*Square miles.*	*Sheets.*	*Miles.*	*Sheets.*	*Sheets.*
996	2,605	817	...	...	...	...
...	...	...	...	212	...	...
...	...	...	2	...	...	...
...	...	...	1	...	...	...
...	...	...	...	...	...	1
...	...	...	...	...	1	...
...	...	...	...	...	2	...
...	...	...	...	...	1	...
...	...	...	...	...	1	...
...	...	...	...	...	1	...
996	2,605	817	3	212	6	1

AND. C. RAMSAY,
Local Director of the Geological Survey of Great Britain.

PLANS OBTAINED FOR MINING RECORD OFFICE, &c.

II.

DOCUMENTS added to the COLLECTION in the MINING RECORD OFFICE during the year ending December 1857.

1. South Brada Mine, Isle of Man.
2. Plan of Alfred Consols.
3. Section of do.
4. Plan of Lewis Mine.
5. Section of do.
6. Plan of West Huel Seton.
7. Section of do.
8. Transverse section of do.
9. Huel Buller, old workings.
10. Plan of West Caradon Mine Sett.
11. do. underground workings in do.
12. Plan of South Tamar Mine.
13. Section of do.
14. do. Strata at Great Ormes Head.
15. Plan of Huel St. Andrew.
16. Section of do.
17. Plan of West Huel Frances.
18. Plan of Bamfylde Mine, Devon.
19. Longitudinal section of do.
10. Transverse section of do.
21. Plan of Mollan Mine
22. Longitudinal section of do. (old part).
23. Plan, 170 fathoms east of Old Mine, do.
24. Section do. do. do.
25. Plan of Botallack Mine.
26. Section of under-sea workings.
27. do. do.
28. Imperial and Royal Mines, Schemnitz.
29. Mining country of Pzibram.
30. Plan of mining property of Shelve, Salop.
31. Mine setts in Shelve, do.
32. Plan of East Grit Mine, ... do.
33. Section of do. ... do.
34. do. the Bog Mine, ... do.
35. Section on engine lode, West Huel Frances.
36. do. on middle lode, do.
37. Transverse section on do.
38. Plan of Devon Burra Burra Mine.
39. Sections of do.
40. Plan of Huel, Crebor.
41. Section of do. Kelly's Shaft.
42. do. do. Bundle's Shaft.
43. Plan of Bedford United.
44. Section of do.
45. Plan of Huel Edward.
46. do. Fowey Consols (6 sheets).
47. Section on lode do.
48. Transverse section of do.
49. Plan of Par Consols (5 sheets).
50. do. West Fowey Consols.
51. Map of Mining district of St. Just.
52. Plan of Lundhill Colliery.
53. Section of Rosehill Colliery, South Staffordshire.
54. do. Wallbut's Colliery.
55. do. Bromley Lane do.
56. do. Dudley's do.
57. do. Ridgeacre do.
58. Sections of chief Mines in Salop, Staffordshire, &c.

59. Plan of Huel Friendship, Tavistock (8 sheets).
60. Transverse sections of do. (11 sheets).
61. Section of Huel Edward, Calstock.
62. Plan of Huel Anderton.
63. Section of Virtuous Lady Mine.
64. do. Huel Bedford.
65. Plan of Devon and Courtenay Consols.
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67. Longitudinal section of part of Huel Friendship.
68. Bassetts of coal in the Haunchwood district.
69. Old workings in Warwickshire coal-field.
70. Plan of East Huel Jane, Truro.
71. Section of do. do.
72. Plan of Huel Jane, do.
73. do. West Stray Park sett.
74. do. workings, do.
75. Section of West Stray Park.
76. do. do.
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78. Plan of Lime and Lead Works, Staunton Harrold.
79. Section of do. do.
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81. do. Bodellwydan Mine, do.
82. Plan of Milwr Mines, do.
83. Transverse section of Milwr, do.
84. General section of do. do.
85. Section of Milwr Mines. do.
86. do. Heward do. do.
87. do. Caea do. do.
88. Brandy Colliery, Denbighshire.
89. Plan of Esgarhir Mine, Cardiganshire.
90. Section of do. do.
91. Plan of Maes-y-Safn, completed to 1857, Flintshire.
92. Section of do. do.
93. Plan of Talargoch, Flintshire.
94. Section of do. do.
95. Plan of Holywell Level and Mine, do.
96. Section of Holway Mine, Holywell.
97. Afon Eitha Colliery workings on Nant coal.
98. do. workings on Yard coal.
99. do. workings on Wall and Bench coal.
100. Section of Strata at Afon Eitha Colliery.
101. do. Westminster Mines, Flintshire.
102. do. do. on another lode, do.
103. Transvere section of do. do.
104. Plan of Hendre Mine sett.
105. do. Hendre workings.
106. Section of Hendre Mine.
107. do. Mountain Limestone in the lead district of Swaledale
108. Plan of Borrington Consols, Devon.
109. Section of do. do.
110. Plan of Sortridge Consols, do.
111. Section of do. do. do.
112. Plan of Sortridge and Bedford, do.
113. do. Huckworthy Bridge, do.
114. do. East Huel Russell, do.
115. Section of do. do.
116. Plan of Herodsfoot, do.
117. Section of do. do.
118. Huel Surprise, do.
119. Plan of South Friendship and Huel Arm, Devon.
120. West Friendship, Devon.

PLANS OBTAINED FOR MINING RECORD OFFICE, &c.

121. Section of South Friendship, Devon.
122. do. East Buckland, do.
123. do. Huel Sir Masset Mine do.
124. do. Huel Robert, do.
125. do. Crowndale, do.
126. Plan of Loweswater Mine, Cumberland.
127. do. Ballyricky, Ireland.
128. do. Minerva Mines, Denbighshire.
129. Section of do. do.
130. do. lodes in Mold Mountain, Flintshire.
131. Plan of Goginan Mine, Cardiganshire.
132. Section of do. do.
133. Belann level section, Flintshire.
134. Section of Mining district, Isle of Man.
135. Plan of Belann's level, Flintshire.
136. Section of Garreg Boeth, do.
137. do. Penrhyn Dhu, Carnarvon.
138. Llynny Pandu, Flintshire.
139. Shafts in Mold Mines, do.
140. Map of do. do.
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142. do. Hollin coal workings, do.
143. do. lower beds, do.
144. Plan of Bog Mine, Flintshire.
145. Longitudinal section do. do.
146. Plan of Gwern-y-Myndd, do.
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148. Plan of Fron-Fawnog, do.
149. Section of do. do.
150. Two sections of do. do.
151. Plan and section of Fawnog Flat, Flintshire.
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153. do. do. on another lode, do.
154. Plan of Pant-y-Mwyn do.
155. do. Pant-y-Buarth do.
156. Section of do. do.
157. Plan or Rhyd-y-Mwyn, do.
158. Section of do. do.
159. Plans and sections of Penrhyn Dhu.
160. Plan of Summerhouse Shaft, Rhyd-y-Mwyn.
161. do. Cathole Mine, Flintshire.
162. Section of do. do.

In addition to the above, the office is now regularly furnished with several price lists of metals, coal and iron circulars,—beyond the ticketing papers for sales of ores; notices of private sales are supplied, and various other important statistical documents, prospectuses, reports, &c.

ROBERT HUNT, Keeper of Mining Records.

22nd December 1857.

III.

DONATIONS to the MUSEUM of PRACTICAL GEOLOGY, during the Year ending 31st December 1857.

ORMEROD, Mr. G. W.—Specimen of Schorl and Felspar, from near Chagford, Devon.

THORBURN, Mr. W.—A specimen of coal of peculiar structure, termed crystallized.

WANOSTROCHT, Mr. VINCENT.—A specimen of bituminous shale, from Kimmeridge Bay.

WRIGHT, Mr.—A specimen of Galena coated with Carbonate of Lead, Quartz, &c., from Leadhills.

DUDGEON, Mr. PAT.—Four specimens of Pectolite, from the coast between Ballintrae and Girvan, Ayrshire; also a specimen of Plumbocalcite, from Leadhills.

TENNENT, Sir J. EMERSON.—Three specimens of Emery-stone, from Naxos, Nicaria, and Turkey.

DAUBURGHY, Major.—Specimens of stream tin ore, of brown iron ore, and native gold, from the neighbourhood of Ballarat, Australia.

NIBLETT, J. B. THOMAS.—A specimen of consolidated beach, from Red Wharf Bay, Anglesea.

WILLIAMS, The Rev. Canon.—A specimen of Brookite, from Tremadoc, North Wales.

PINTO, PEREZ, and Co.—A fine specimen of Malachite, from the Bembe mines, district of San José de Encoge, East of Ambriz.

DILLWYN, Mr. LEWIS, M.P.—Three dies executed for the late Sir Henry de la Beche, by Messrs. W. and L. C. Wyon, one obverse and two reverse.

LIDDIARD, Mr.—A specimen of potter's clay, from Cranham.

FIELD, Mr. OSGOOD.—A large specimen of crystallized Native Copper, from the Norwich Mine, Lake Superior.

HUNT, Mr. THOMAS CAREW.—Specimens of rare minerals, from the Azores.

PALLISER, Mrs.—A specimen of pottery of early Staffordshire manufacture.

EVANS and ASKIN, Messrs.—A series of specimens illustrating the properties and applications of German silver.

COOKWORTHY, Mr. W.—Twelve specimens of porcelain, of early English manufacture.

BOLLAERT, Mr.—A large specimen of Borate of Lime, from Tarapaca, in Peru.

STURGESS, Mr.—A series of specimens illustrative of Britannia metal and its applications.

DOUGLAS, Major.—A specimen of Wootz steel, from Bengal.

BRAGG, Mr. JOHN.—Four polished specimens of lapis lazuli, avanturine, stalactite, and hæmatite.

ROGERS, Mr. E.—A specimen of Sparry iron ore, from the Brendon Hills, West Somerset.

LATROBE, Mr. C. J.—Specimens of fine Berlin iron castings.

WILSON, Professor GEORGE.—Three fragments of mural tiles, discovered in the Cistercian Nunnery at North Berwick.

BELLASIS, Mr. W. F.—An interesting series of specimens illustrative of the method of figuring patterns on cornelians, including an early specimen found in the ruins of Brahminabad, in Sind.

LEGGE, The Hon. A.C.—A portion of a polished pebble of cornelian, found in the parish of Patteshull, Staffordshire.

KING, Mr. THOMAS D.—A rare specimen of Italian encaustic cornelian.

THURLOW, The Hon. J.—A fine mass of hæmatite iron ore, from near Muirkirk.

PASTORELLI, Messrs. and Co.—Specimens of aluminium wire, and of its application for self-registering maximum thermometers.

MARK, Mr. E. W.—Two specimens illustrating the mode of occurrence of the emerald, from New Granada.

WILLS, Mr. WILLIAM, (through Mr. Marks).—A collection of fossils from the neighbourhood of Bogota.

DONATIONS TO THE MUSEUM OF GEOLOGY, &c.

BENSTED, Mr. W. H.—A cube of the Kentish rag building stone, from the Iguanodon Quarry, Maidstone.

RANDLESON, Mr. W.—A large specimen of Titanium, from the Whitehaven Hæmatite Iron Company's Works, on Cleator Moor.

MONTEIRO, Mr. J. J.—Two very fine crystals of Sulphate of Lime, from Shotover Hill, near Oxford.

VICTORIA, The Government of.—Specimens of auriferous gold quartz, weighing in all 37 lbs. 1 oz. A sectional model of the strata penetrated in the diggings, with clays, &c., illustrative of the sections; and specimens of metallic tin, with the black tin from which it is made.

WOOD, Mr. C.—A specimen exhibiting the junction of granite with gneiss, from Cumberland.

SLOANE, Mr.—A fine collection of specimens from Monte-Catini, illustrating the mode of occurrence of copper ore.

TREVELYAN, Sir W. CALVERLEY.—Specimens of papery mountain leather in fissures of red marl, Seaton, Devonshire.

ROWE, Captain RICHARD.—Very fine specimens of Blende and Galena, from the Laxey Mine, Isle of Man.

MITCHELL, Mr. W.—Specimens of sandstones impregnated with copper and with argentiferous lead.

HUNT, Mr. JAMES.—A fine specimen of "crystallized coal."

MELDRUM, Mr. E.—Specimens of the Pirnie cannel coal, from a pit near Leven, Fifeshire.

TWAMLEY, Mr. CHARLES.—A fine specimen of crystallized pig iron, from Staffordshire.

TRENHAM REEKS, Curator.

IV.

DONATIONS to the LIBRARY.

PHILLIPS, J. A.—A Geological Reconnoissance of Tennessee, by James M. Safford, State Geologist. 1 vol. 8vo. 1856, accompanied by a map.

GEOLOGICAL SOCIETY, The Council of the.—Fifty-three volumes and pamphlets upon Geology, Mining, &c.

HARTUNG, GEORGE. (through Sir C. Lyell).—Die geologischen Verhältnisse der Inseln Lanzarote und Fuertaventura. 1 vol. 4to. accompanied with maps and plates.

HUNT, Mr. ROBERT, F.R.S.—A Manual of Photography. 8vo. Fifth edition. 1857.

MAHMOUD, Major.—The Elements of the Science of Grammar and Turkish Grammar, by Edward Yates, B.A. 1 vol. Small 8vo. 1857.

MOSCOU, Société Impériale des Naturalistes de.—Bulletins, 1855, No. 2, 4; et 1856, No. 1. Nouveaux Mémoires, Tom. X.

GEOLOGICAL SOCIETY OF DUBLIN, The Council of.—Volumes 1 to 6 of the Journal of the Society, wanting part 1 of Vol. 1.

SCHRENK, Herr A. W.—Reise durch die Tundren der Samojeden. Zweite Theil. 8vo. Dorpat, 1854.

NORTH OF ENGLAND INSTITUTE OF MINING ENGINEERS, The Council of.—Volumes 1 to 4 of the Transactions of the Institute. 8vo. Half-bound. 1852, 1856.

HALL, Mr. JAMES, of Albany.—Descriptions of new Species of Palæozoic Fossils. 1 vol. 8vo. Albany, 1857.

AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY.—Volume 2 of the Bulletin of the Society. New York, 1857.

ROYAL INSTITUTION, The Members of.—A new Class Catalogue of the Library of the Institution, by B. Vincent. 1 vol. thick 8vo. cloth. 1857. Notices of the Meetings of the Members. Part vii. 1857.

FORCHAMMER, Professor.—Oversigt over det Kgl. danske Videnskabernes Selskabs. 8vo. Kjöbenhavn.

MANCHESTER, The Literary and Philosophical Society of.—The Works of John Dalton, D.C.L., &c., &c. 4 vols. 8vo. cloth. And Volume 14 of the Memoirs of the Society.

TRENHAM REEKS, Librarian.

V.

RETURN of MAPS and SECTIONS of the Geological Survey of England supplied for sale to Messrs. Longman & Co., the publishers.

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INDEX MAP
(A)
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(ENGLAND AND WALES)

Published
in Sheets on a Scale of one Inch to a Mile.
Shewing the Progress to
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GEOLOGICAL SURVEY

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And^w Ramsay
Local Director of the Geological Survey of Great Britain

INDEX MAP
(B)
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(SCOTLAND)

Shewing the Progress to
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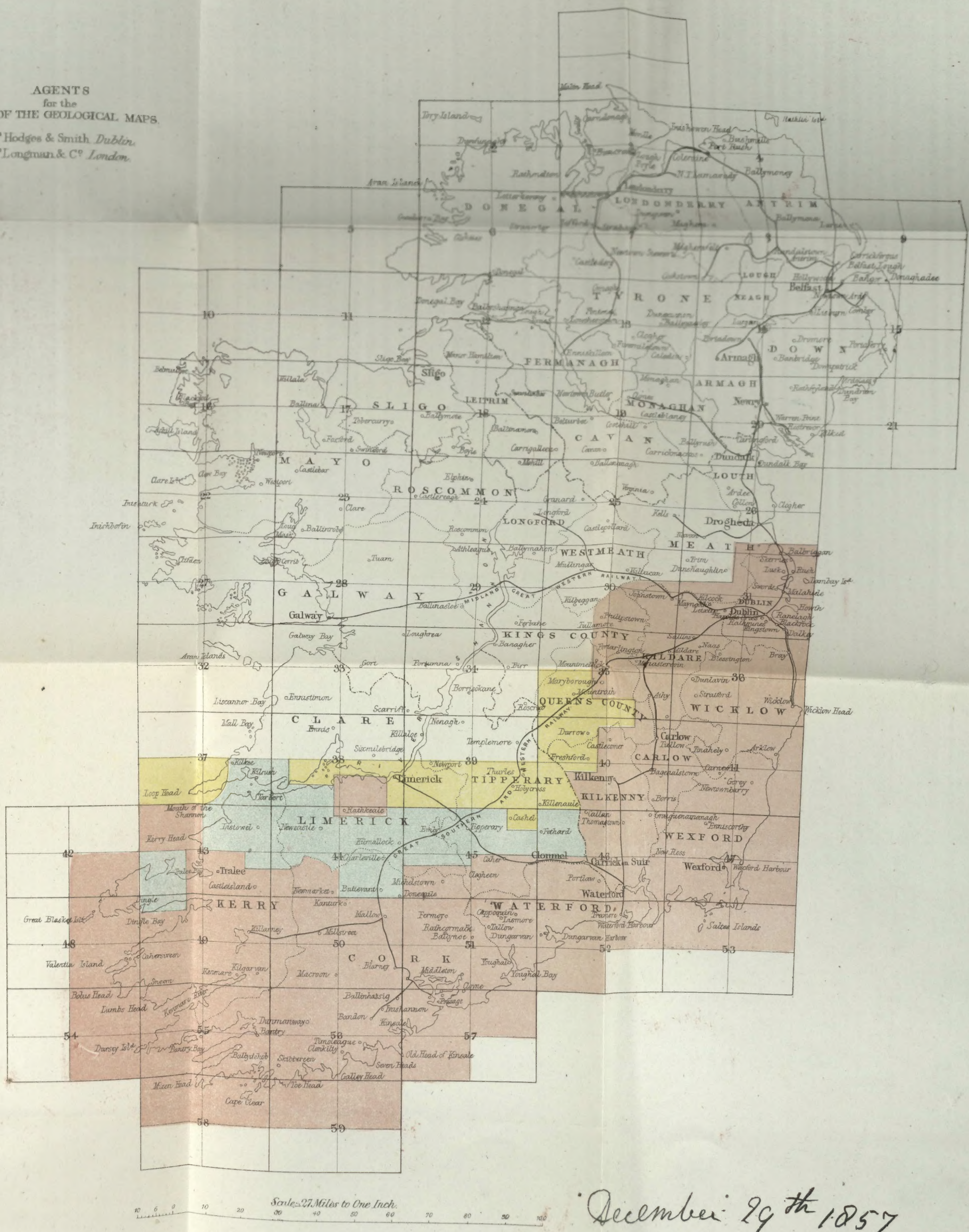

December 29th 1857

J. Beete Jukes

1857.

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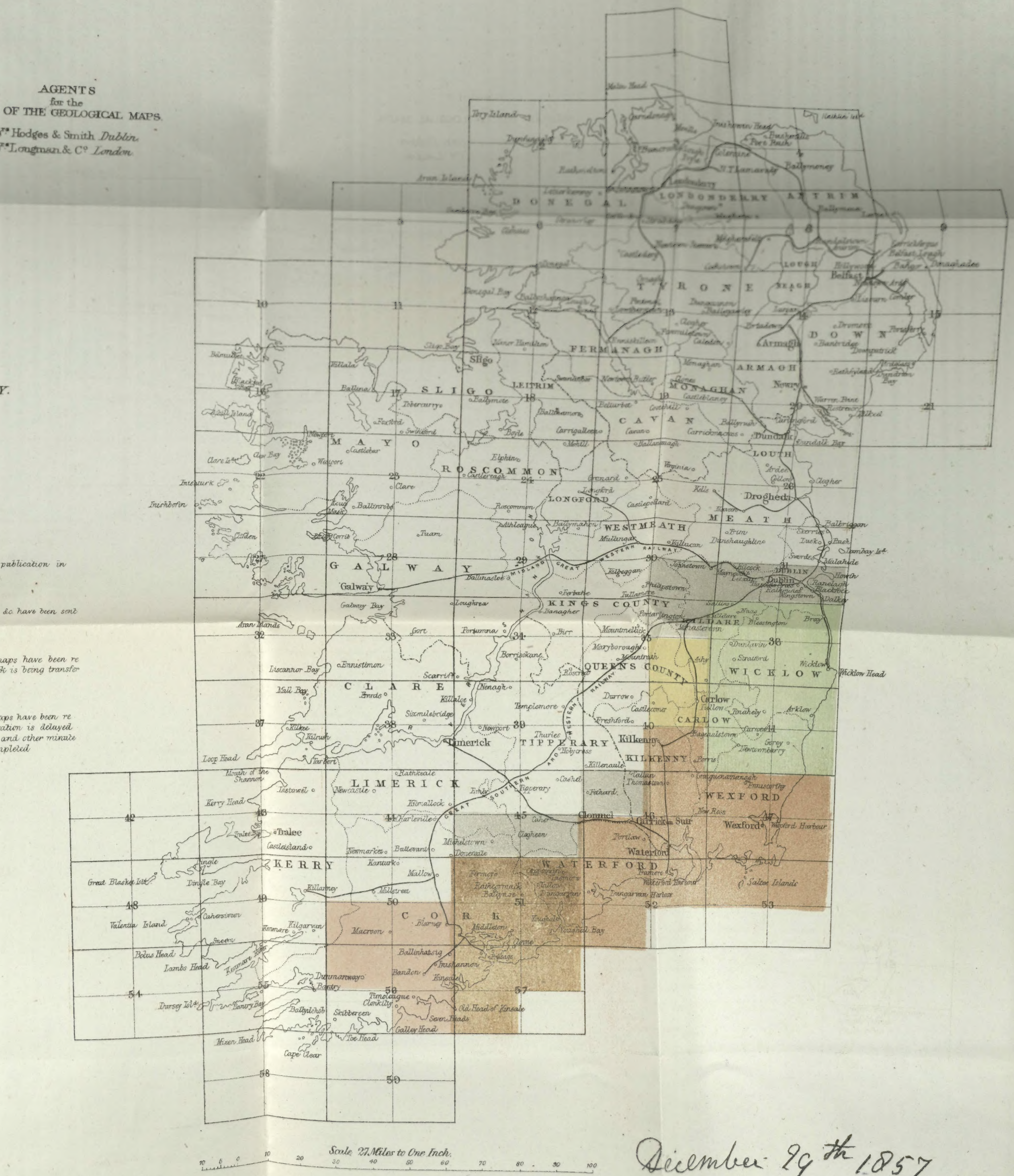

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J. Beete Jukes

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